

all have about the same appearance (Fig. 8). The capsule is very much thickened and is composed chiefly of hyaline connective tissue. To it are attached irregular projections of fat and connective tissue. Throughout the section there is a very extensive increase in connective tissue, both in the trabeculae and in the pulp. The organ contains comparatively little blood. The walls of the venous spaces are greatly thickened by a growth of rather cellular connective tissue. In Mallory's connective tissue stain the walls are seen to be made up of a reticulated fibrous tissue. The venous spaces are small. Besides red blood cells they contain a few polymorphonuclear leukocytes, many small round cells, and an occasional large endothelioid cell. Very rarely a red-blood-corpuscle-carrying cell is seen. The cells in the walls of the sinuses are principally connective tissue cells. No uninuclear or multinuclear giant cells are seen. Very few eosinophiles are seen in sections.

"The Malpighian bodies are quite scarce. Many of them are very small. The reticulum beneath the cells is thickened and the follicle is overgrown with connective tissue. Others appear unusually large and show compensatory hypertrophy. They are quite regular. The middle of the follicle is composed of a large germinal centre filled with large irregular pale cells of epithelioid type. The margin is quite regular and is bordered by a narrow dense zone of small lymphocytes. Beyond this is a wider, paler zone of cells, chiefly small lymphocytes, fairly well separated and mixed with a few large lymphocytes and epithelioid cells. The boundary zone is regular and definite. The reticulum is not thickened except in a few instances about the outer border. No pigment is seen. There are a few small areas of blood mixed with fibrin. The connective tissue about the vessels is much increased, but the intima of the blood-vessels is delicate. Taken as a whole, the spleen shows an extreme grade of thickening of the walls of the venous spaces with a diffuse increase in rather cellular connective tissue. Many of the Malpighian bodies are atrophied, though a few are exceedingly large with active proliferating germinal centres.

"Diagnosis: Chronic perisplenitis and interstitial splenitis."

CLINICAL NOTES ON LARYNGEAL TUBERCULOSIS.¹

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IT seems to me it may be of interest to record some personal observations and experience about tuberculosis as it appears in the

¹ Read at a meeting of the New York Academy of Medicine, January 16, 1908.

larynx. I shall also emphasize certain facts pertaining to its management and treatment which I regard as very important. For many years I had extensive opportunities of seeing and treating this disease. Latterly my patients are fewer, but I have tried to keep track of recent methods, and while in a few instances I believe real advances have been made as to our knowledge of laryngeal tuberculosis, I am also convinced that a return with newer lights to older practice is really the important asset of many among us.

In a fair proportion of cases of pulmonary tuberculosis we have, as we all know, laryngeal complications. These complications are more frequent among men than women, and are reasonably explained by different occupations in which the larynx is exposed to more irritating influences. One fact which seems to me of great importance is the ignoring of the larynx in far too many cases of suspected or confirmed pulmonary tuberculosis. In the first category a laryngeal examination by means of the laryngoscope may frequently fix a diagnosis which is very obscure prior to it. Nor is this examination always less important simply because there are few or no laryngeal symptoms. The voice may be almost, if not entirely, normal at times, and yet there may be inactivity or slight paresis of one or both vocal cords; or there may be marked localized anemia;² or there may be slight congestion of one or both vocal cords in a limited area; or the arytenoids may be slightly infiltrated, and likewise the interarytenoid commissure. Yet these appearances are already suspicious; indeed, with a certain history they are more characteristic even than a little prolongation or harshness of the expiratory murmur at the apex of the lung, or an indefinite dulness, which is often nothing more than the result of the percussion note elicited by a finger from a relaxed or possibly corpulent chest wall.

Again, in the very frequent cases of huskiness or hoarseness of voice, more or less remittent or intermittent, and usually considered and treated as a slight cold, or catarrhal inflammation of the larynx, do not the appearances under the laryngoscope enable us often to differentiate properly what is and what is not a first stage of laryngeal tuberculosis? In the former instance the redness is far more general; in the latter it is localized to a limited portion of the vocal cords, the ventricular bands, or other portion of the larynx.

In the cases in which there is marked hoarseness, some intra-laryngeal discomfort or pain, or dysphagia even if only moderate, a laryngeal examination of course should be properly made. In every case, and emphatically in all young adults, in whom a cold or cough has unduly persisted despite rational treatment, or whenever the causation seems in any way obscure, we should invariably

² Dr. Herbert Maxon King, physician-in-chief at the Loomis Sanitarium, Liberty, New York, writes: "A pallor of the larynx is very significant and often an early sign" of pulmonary tuberculosis. *New York Med. Record*, December 14, 1907, p. 977.

insist upon a laryngeal examination. Time and time again I have seen an ulceration of the vocal cord, of the arytenoid cartilage or commissure, of the arytenoid folds, and even of the epiglottis itself, when the laryngeal symptoms were not unduly pronounced. And these cases, again, occur, although perhaps infrequently, when the intrapulmonary condition is not perfectly clear and when no tubercle bacilli have yet been discovered in the sputum.

When we have noted any one of the preceding conditions, besides confirming our diagnosis as to the presence of pulmonary tuberculosis in the very great majority of cases, is it otherwise valuable to the patient and to us? Certainly. In the first place, when the laryngeal condition is only catarrhal, will not proper management and treatment prevent it from becoming tuberculous? It is only necessary, as I believe, in some instances, for the mucous membrane to lose its epithelial covering, or to become in the slightest degree abraded, to have a portal of entry for the infecting germ. When the case is one of manifest laryngeal tuberculosis at its initial stage, may we not by judicious management prevent the local disease from extending and getting, sooner or later, beyond our means of control or arrest? To these questions I answer unreservedly, we can occasionally, I believe.

Of course, I admit, and we all should admit, that the general treatment which is wisest and best for the intrapulmonary tuberculosis is also most judicious, even if there be a laryngeal complication. But, on the other hand, there are certain clear-cut indications of management and treatment which proceed directly from the localization. The importance of this treatment must be admitted when we state how great the added suffering often is of the patient who has advanced ulcerative disease of the larynx with the accompanying infiltration or œdema of certain parts, and with the loss of vocal function which is thus occasioned. But this is as nothing to the dysphagia, often allied with increased dyspnoea from obstruction, which makes every act of swallowing a torture. Even when the pain of swallowing has been lessened by anodynes, or position, distressing paroxysms of cough are not obviated by reason of solid particles or fluids penetrating into the larynx.

In the way of protective and curative treatment, what should be insisted upon? In my judgment two things, essentially: (1) rest for the larynx, and (2) inhalations. Upon the great necessity of rest to the larynx, Sir Felix Simon, of London, and after him I³ insisted many years ago. For several years past, many indeed, the importance of this matter lay dormant, as it were, or, at all events, was not insisted upon as it should be. Again it is to the fore, and during the past year or two, in more than one book and in several journal articles it is amplified and accentuated. In some

³ Proc. Amer. Laryngol. Assoc., 1880.

sanitaria for tuberculous patients, when the larynx is at all affected, partial or complete silence is insisted upon. As far as may be, everything is written with slate and pencil or upon a writing pad, and the spoken word is not permitted. Of course, we cannot get complete rest for the larynx in this way because every drawn breath, every paroxysm of cough, every act of deglutition causes laryngeal movement, and alas, at times, discomfort or pain; but we lessen movement as far as possible, and by so doing we afford the patient a better chance of cure.

Are the results such as to justify our hopes and expectations? Frequently they are. Congestion and infiltration have greatly diminished or wholly disappeared. Ulcerations, when limited, have entirely healed. And this has come about not only when the general health and intrapulmonary condition have both notably improved, but also when the latter have remained stationary or deteriorated.

There is nothing new about the great value of the principle of rest in many, very many diseased conditions—both medical and surgical—but, except for a broken bone or diseased joint, nowhere else does it seem more useful, in some instances, than in diseases of the larynx. To Hilton, above other writers, we owe a great debt for wise insistence upon this very important fact of the great utility of rest in the management and treatment of many accidents and diseases—both acute and chronic.

In a few instances it has been noted by myself and others that when tracheotomy had been performed for laryngeal tuberculosis, with marked and distressing stenosis, the condition of the diseased parts were notably and favorably modified apparently or, indeed, obviously, by the rest to the larynx thus afforded.⁴

Formerly, in all instances of laryngeal tuberculosis at the initial stage, I made use of atomized solutions followed or not by some pigment locally. Frequently, and preferably, this pigment was tincture of iron perchloride combined with glycerin and water. At a later period, and when there was pronounced infiltration with œdema of the arytenoids, arytenoid folds, or epiglottis, with notable amount of mucus or mucopus covering the posterior portion of the larynx, or filling and obscuring its interior, the frequent use of an alkaline, carbolic spray by means of Sass' tubes appeared to be the best preparatory cleansing application before the use of iron, zinc, tannin, nitrate of silver, etc. These latter applications at this stage were rarely used except of moderate strength, or well diluted, for the reason that otherwise they sometimes caused distressing spasm. And later there was occasionally local and increased laryngeal uneasiness for a time and no subsequent evident improvement in the local condition. Whenever ulceration appeared, was localized,

⁴ Beverley Robinson. Tracheotomy in Ulcerative Phthisical Laryngitis, *AMER. JOUR. MED. SCI.*, April, 1879.

and could be readily seen, attempts were made to reach it directly with somewhat stronger pigments by means of a swab, brush, or curved probe on which nitrate of silver had been fused or chromic acid fixed. Rarely, if ever, have I had occasion to make use of the galvanic cautery to infiltration, thickening, swelling, or ulceration. Whenever there was notable excrescence of tissue, more particularly in the interarytenoid fold, I have either made use of the stronger applications referred to, or, as a preliminary measure, employed the tube or other suitable forceps to reduce the redundancy of tissue. In no instance have I attempted to make use of submucous injections in the larynx or the trachea. They never appealed to me strongly as a remedial means of value in these cases, and I always had and have a reasonable doubt as to their real efficacy in the hands of others.

As to the later surgical methods of Krause and Heryng by means of punching and curetting—these I must admit rarely make an appeal to me, especially the former. To punch out a bit of infiltrated, somewhat hardened, or œdematous tissue, over the intact arytenoid cartilage, I do not regard as indicated or desirable. Even incisions or punctures of these swellings are only profitable when the tissues are soft relatively and permit serous fluid to exude in appreciable quantity, as would be the case, of course, in soft œdema of the larynx and when notable stenosis with stridor was thus occasioned. Then, of course, with a properly shielded or curved lancet or knife, very great temporary relief from a very severe and sometimes imminently dangerous condition may be afforded.

If the ulceration be localized, if it be single, or a few ulcerations at most, these may be occasionally curetted moderately with some advantage, and while I have not attempted it myself, I do not object. Such a localized ulcer is not infrequently found underneath—or rather below—the polypoid excrescence of the interarytenoid fold. After the excrescence has been in part or wholly removed by forceps, the ulcer itself may be curetted before a local application is made. It is usually advisable before curetting is done or, indeed, the stronger pigments are applied, that a local anesthetic of cocaine should be made by a swab or spray. This application need not be very strong; a 4 per cent. solution is often sufficient.

Formerly, when I found a patient suffering with laryngeal pain and distress from ulceration and subsequent infiltration or perichondritis, I applied morphine, iodoform, or both combined, frequently to the parts, and thus lessened for a short time the patient's suffering and rendered deglutition somewhat easier in a few instances.

Again, position, notably that of Wolfenden, in which the patient's head hangs over the bed and fluid is sucked through a rubber tube from a mug or pitcher below, will afford relief to swallowing. Today we obtain more relief of pain probably in all abraded surfaces from the frequent local use of orthoform than by

any other known agent. Fortunately, too, orthoform is innocuous, and on this account may be used frequently and by the patient himself whenever required. Leduke's bent hard rubber tube, which may be inserted well back in the throat and through which the orthoform, placed in the orifice of the other extremity, may be aspirated strongly, offers a ready means to the patient to accomplish his purpose. From the experience and reports of many competent observers during latter years no application to ulcers of the larynx has received stronger endorsement than that of lactic acid. Applied in 10 to 80 per cent. solution, or even pure, it modifies the ulceration very favorably. Indeed, it not rarely seems to help the complete healing of the ulcer when single and localized. A local anesthetic is often required before and after its application, and especially is this true whenever curetting has been practised prior to the application of the lactic acid. If the lactic acid is applied locally in strong solution or pure, it should be done with care, so as to avoid undue pain and distress. If used on a swab or brush, any excess of acid should be gotten rid of before it is applied, because if a drop should fall into the larynx, notable spasm of the larynx, sometimes very threatening, will immediately follow.

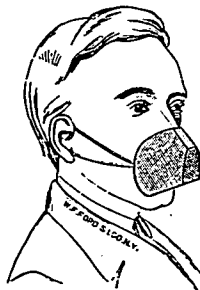
While I am willing to admit the utility of lactic acid, it is now pretty well shown by the report of H. G. Felkin⁵ that its curative effects are markedly increased by complete rest to the larynx, as is afforded by insistence upon prolonged, absolute silence. Felkin's report embraces several cases which belong to him, and some also to Sir Felix Simon mutually. In those instances of numerous small ulcers outside the larynx known as upper tuberculous laryngitis, and in which the prognosis is specially bad, I disapprove of the use entirely of curetting, applications of lactic acid, etc. They cause considerable distress, are of no possible use, and are not justified at all when we consider the advanced, or very threatening condition of the patient from the point of view of the local pulmonary changes, or the general tuberculous infection, which almost invariably accompanies them.

In a few rare cases in which the epiglottis is the seat of deep ulceration, accompanied by very painful dysphagia, it has been found advisable to excise it either by means of a suitable knife or by the galvano-cautery snare. Notable relief from pain has followed in more than one instance, but the result at best has only been temporary, for in a brief period of time the patient has died because of the rapid inroads of disease already far advanced and very infectious in type. Seldom, either from this operation, or curetting, or punching, has any considerable or annoying hemorrhage occurred. One exception should be made in the case of operation

⁵ Brit. Med. Jour., 1907, i, 1421.

on the swollen ventricular bands. Here, indeed, notable and worrying hemorrhage has occurred after deep curetting.

I now come, finally, to what I regard as by far the most important local measure to be employed by every sufferer from laryngeal tuberculosis at any stage of the disease, and that is the frequent, persistent, long-continued use of the perforated zinc inhaler (see figure) with inhalations of creosote and alcohol, or, when there is much irritative cough, of beechwood creasote, alcohol, and spirit of chloroform in equal parts. This is no new fact to me, but has become more and more a firm conviction. I have already several times directed attention to it, and I now reiterate it because of its great value. In 1885, at the second meeting of the Climatological Association, I read a paper on antiseptic inhalations, in which I first directed attention to the great value of these inhalations in many forms of laryngeal,



Perforated zinc inhaler.

bronchial, and even pulmonary disease. Later, in my little work on *Inhalers and Inhalants*, I again affirmed the value of these inhalations. And in more than one article in medical journals, or in remarks before societies, since that time, I have recurred to their importance. These inhalations modify sputum favorably, diminish its quantity, lessen cough, thus promoting rest, sleep, and nutrition, and general improvement physically, and in some instances appear to be the means through which the patient has gotten rid of tubercle bacilli permanently. I know of absolutely no other method, no other local application, no surgical measure, which will afford anything like the same amount of relief to symptoms and hasten and promote cure in suitable cases to the same degree as will the perforated zinc inhaler with the inhaling fluid recommended.

It is unnecessary for me at this time to give all my reasons why the skepticism made known and objections urged against the systematic

and continued use of the perforated zinc inhaler fail completely to establish the value of the objector's or doubter's position. The arguments and statements that I have given previously in favor of the use of the zinc inhaler, with the records of many cases observed by me, may be found in the papers and book referred to. Dr. Austin Flint, Sr., further pointed out its great utility in a series of cases of pulmonary phthisis observed by him and published many years ago. This fact I have already referred to.⁶

Only within a brief period, Dr. Lees, late physician to St. Mary's Hospital, London, England, stated, in his farewell address at that institution, that "during the past two or three years he had treated all his cases of this disease (pulmonary tuberculosis) with continuous inhalations by means of a Yeo's respirator,⁷ on which was placed a mixture of carbolic acid, creosote, iodine, alcohol, ether, and chloroform. The inhaler⁸ is worn day and night, and removed only at meal times. Six or eight drops of the mixture are dropped on the sponge of the inhaler every hour while the patient is awake, and several times during the night. This rapidly relieves cough, and *patients seem to derive great benefit from its use.*" It is a great help and encouragement to me to find unqualified support of what I have believed for so long a time from such a distinguished and accurate observer who has written truly, well, and with wisdom about several other most important matters relating to practical medicine—notably, the great value of blood letting in pneumonia, and the utility of the salicylates and sodium bicarbonate, combined and in large doses, in the treatment of acute articular rheumatism.

"Dr. Lees closed his address with a comparison of the good results which medical treatment can obtain in acute bacterial invasions with the disappointing failure of the most modern methods of therapeutic inoculation in these diseases—a necessary encouragement in these days of pessimism and skepticism as to the value of the drugs and methods which we have used so long."

Last winter I had a patient under my care at the clinic of the Bellevue and University Hospital Medical College, who had advanced pulmonary tuberculosis. His cough was most distressing and his nights, in consequence, sleepless. Nothing gave him any relief except the use of the perforated zinc inhaler. A case of bronchitis, with distressing cough and dyspnoea, reported by me,⁹ was only relieved by means of the inhaler. A patient of mine suffering from pulmonary tuberculosis at the stage of infiltration with numerous bacilli in the sputum, one year ago, has been more helped, in my judgment, by the continued use of the zinc inhaler than in any other way, or by any other single measure. I consider this patient now almost

⁶ New York Med. Record, 1906.

⁷ Yeo's respirator is almost precisely similar to the perforated zinc inhaler I make use of.

⁸ New York Med. Jour., December 8, 1888, p. 617.

⁹ Ibid., December 8, 1906, p. 900.

well, and at times no tubercle bacilli can be found. It is my conviction that, despite healthful surroundings, proper nourishment, correct habits, and suitable internal medication, his condition would be at present nothing like so good if he had not used the inhaler. Indeed, when he had neglected or given up its use for a time, he was not so well and the bacilli recurred.

I saw a patient last winter with general tubercular infiltration of both lungs, which probably involved a great portion of them. This man had one of the most distressing, continuous, unremitting coughs I have ever known. Almost every rational measure was tried in vain, by myself and others, to give him relief. After the use of the inhaler for many weeks he was like a new man, returned to his work, and his cough had almost, if not entirely, disappeared.

I cannot emphasize too strongly, in this connection, certain facts well known to those of us who have had long and watchful experience, and these are:

1. There is a certain proportion of patients affected with laryngeal tuberculosis, just as those with pulmonary tuberculosis, who do not recover, in whom the disease is not even arrested no matter what treatment may be followed. These cases remain stationary, perhaps, for a little while, but even this is doubtful, and, as a rule, despite all our efforts and doings, the disease marches steadily onward and gradually grows worse, until the final end comes.

2. While we cannot predicate absolutely, from the intralaryngeal evidences of tuberculous disease, as to the extent and stage of the tuberculous disease of the lungs, yet usually, if one localization of tuberculous disease is of bad augury, so is the other in the larger proportion of cases.

Of course, there are exceptions, but they are few, and sooner or later the rule will obtain in the greater number of instances and my statement be verified. This fact is important when we consider fairly what should be done in the individual case of laryngeal tuberculosis. Should we employ methods which are expensive, tiresome, distressing, and useless when we know perfectly well, or could if we only would, what the outcome is to be, or should we content ourselves with promoting our patients' comfort as best we can and effect as much euthanasia as possible in a disease which occasionally is one of the most distressing and heart-sickening that afflicts humanity?

Recently my attention has been directed to valuable researches made by W. Jobson Horne, of London. The results of these researches "show that 97 per cent. of the cases of phthisis experienced symptoms referable to the larynx at one time or another in the course of the disease and the investigation further went to show that the routine examination of the larynx, in persons suffering from symptoms suggestive of early pulmonary disease, would enable a diagnosis of phthisis to be made at a time when the stethoscope

yields no evidence, and that is at a time when the physician can be of greater service to the patient."

In 1905, Mr. Harold Barwell,¹⁰ of London, read a paper on "The Choice of the Method of Treatment in Cases of Tuberculous Laryngitis, with a Plea for the Routine Inspection of the Throats of Consumptive Patients," the conclusion of which is entirely in accord with the feelings of Dr. Geo. L. Richards, of Fall River, Mass., and with my own, in regard to the subject. Barwell, quoted by Richards, writes: "Because it (tuberculous laryngitis) is common in all stages of phthisis, because it may cause no symptoms to attract attention, and because the early stages are much more amenable to treatment, and also because it produces one of the most painful and distressing forms of death, I most strongly urge that all cases of consumption should have their larynges inspected at regular intervals and as a matter of routine."¹¹

Of course, in obscure cases, despite very careful laryngeal and physical examination, we should not ignore "one other valuable aid to the early diagnosis" of pulmonary and laryngeal tuberculosis, viz., "the use of tuberculin." It will frequently enable us, as Dr. Edward O. Otis writes, "to establish beyond a doubt the existence of the disease."¹²

We should also admit that occasionally we may be able by means of the Röntgen rays to recognize a pulmonary tuberculous process in an earlier stage than is possible by auscultation, or percussion.¹³ Further, the discovery of tubercle bacilli in the feces¹⁴ in obscure cases will alone sometimes make the diagnosis possible. "The application of tuberculin to the eye in diagnosis, which has been recently introduced by Prof. Calmette,¹⁵ of Lille, France, gives promise of great advantages over the fever test."¹⁶

I should like to commend to everyone a very wise and thoughtful article¹⁷ entitled "Exile and Drugs in the Treatment of Tuberculosis," by Dr. A. Jacobi, of New York. Nestor of our profession, he is also one of our wisest counsellors and most sincere of professional friends in the cause of intelligent, broad-minded, and thoroughly sane medical practice—in my humble judgment. "Modern medical science and art," he writes, "which have succeeded in appreciating the teaching that the best object of man's endeavor is man himself, have tried to utilize nature in all her bounties." Let us remember it always, I pray, and, besides, these other words of great import, "Life is short, and art long, occasion fleeting, experiment fallacious, and judgment difficult."

¹⁰ British Med. Jour., 1905.

¹¹ Boston Med. and Surg. Jour., August 9, 1906.

¹² Ibid., September 12, 1907.

¹³ Ibid., September 26, 1907, p. 420.—Percy Brown.

¹⁴ New York Med. Jour., August 31, 1907.—M. Solis Cohen.

¹⁵ Calmette's earlier observations are further confirmed by those of Dr. Wolff Eisner and other authorities at a meeting of the Berlin Medical Association, *Lancet*, December 28, 1907.

¹⁶ E. R. Baldwin, "The Ophthalmic-Tuberculin Diagnostic Test: Some Clinical Observations," *New York State Journal of Medicine*, October, 1907, p. 413.

¹⁷ *Amer. Med.*, December 23, 1905, p. 1063.

I would add a few final words. I am familiar with the report and discussion before the Section on Medicine of the Academy,¹⁸ in regard to the value of Kuhn's lung suction mask for the hyperemic treatment (Bier) of pulmonary tuberculosis. Neither report nor discussion has convinced me that this mask would prove so useful as the much cheaper, simpler, already widely and long time known perforated zinc inhaler, which I vaunt again with additional enthusiasm and conviction. What Dr. Willy Meyer states in his paper, apropos of Kuhn's mask, I reëcho emphatically for the perforated zinc inhaler.

"It will prove to be of especial value in dispensary practice and in the treatment of such phthisical patients as are not endowed with the riches of this world and cannot afford to leave their homes and their families. I, therefore, believe that the perforated zinc inhaler for the treatment of phthisical patients should be promptly introduced into sanatoria as well as in private practice, thus allowing patients afflicted with pulmonary tuberculosis to benefit from the perforated zinc inhaler."¹⁹

Eli H. Long²⁰ adds further testimony to the value of antiseptic inhalations in the treatment of laryngeal and pulmonary tuberculosis. "In pulmonary tuberculosis medicinal treatment has been in recent years greatly discounted, in comparison with out-of-door living, good nourishment, and proper adjustment of bodily rest and activity. But local treatment by the use of antiseptic inhalations, is so rational and so useful in incipient cases, as to easily take first place in the medicinal part of the treatment; and the less perfectly the hygienic treatment can be applied in any given case the more important becomes the inhalation treatment, though secondary in value."

At a recent meeting of the Practitioners' Society of New York,²¹ I presented a patient who had been under my care for pulmonary tuberculosis. His disease is now arrested, if not cured. The result is due, as I believe, in addition to proper hygienic measures and a sojourn during the past winter at Asheville, N. C., to the prolonged, faithful use of the perforated zinc inhaler.

In conclusion I would again insist upon two things as most essential in the treatment of laryngeal phthisis locally: 1. Rest to the larynx.²² 2. Dry vaporized antiseptic inhalations. To me the latter are by far the more important, because if they be used even singly they will effect curative results which the former alone can never accomplish.

¹⁸ New York Med. Record, January 9, 1907, pp. 757, 793, 794.

¹⁹ Cited textually from Dr. Willy Meyer's article in Med. Record, except for the substitution of perforated zinc inhaler for Kuhn's mask.

²⁰ New York State Jour. Med., June, 1908, p. 325.

²¹ Med. Record, May 30, 1908, p. 921.

²² Bardswell and Adams report in Brit. Med. Jour., June 8, 1907, six cases of laryngeal tuberculosis all markedly benefited by vocal rest. In four cases of ulceration these healed entirely. In every case improvement in the larynx was accompanied by improvement of the general condition and the condition of the lungs. All patients benefited greatly with an average treatment of five months and over.